Claims

1. A method for routing a data packet comprising a header section and a payload section, said header section comprising a compressed header section (48) containing coded information including routing information, comprising the steps of:
- receiving (S110) said data packet at an input interface (12)
- routing (S114, S126) said data packet to an output interface (32)
- forwarding (S122, S130) said data packet to said output interface (32),
wherein said routing step comprises ascertaining (S116, S124) said routing information from said compressed header section, and wherein said coded information is left unchanged in said routing and forwarding steps.

2. A method according to claim 1, wherein said ascertaining step comprises a step of reading a first header compression context identifier from said compressed header section.

3. A method according to claim 1 or 2, wherein said routing step comprises a step of assigning a second header compression context identifier to said data packet and a step of replacing said first header compression context identifier by said second header compression context identifier in said data packet.

4. A method according to claim 3, wherein said second header compression context identifier is one of a predetermined set of numbers.

5. A method according to claim 3 or 4, wherein said assigning step comprises a step of looking up said second header compression context identifier in a switching table, said switching table uniquely assigning to said first header compression context identifier said second header compression identifier and one of a plurality of output interfaces.

6. A method according to claim 5, further comprising a step of maintaining said switching table.

7. A method according to claim 6, wherein said maintaining step comprises receiving and saving an incoming header compression context.

8. A method according to claim 7, wherein said maintaining step further comprises reading said first header compression context identifier and a destination address from said header compression context.

9. A method according to claim 8, wherein said maintaining step further comprises assigning one of a plurality of output interfaces to said first header compression context identifier based on a routing table, said routing table assigning said output interface to said destination address.

10. A method according to claim 9, wherein said maintaining step further comprises a step of assigning said second header compression context identifier to said first header compression context identifier.

11. A method according to claim 10, wherein said maintaining step further comprises a step of creating a new entry in said switching table for each incoming header compression context, said entry comprising said first header compression context identifier, said second header compression context identifier, and said output port.

12. A method according to anyone of claims 6 to 11, wherein said maintaining step comprises a step of erasing an entry from said switching table given a predetermined condition.

13. A method according to claim 0, comprising, before said routing step, a step of decompressing (S16) said routing information from said compressed header section (48).

14. A method according to claim 13 wherein said decompressing step comprises decompressing said complete compressed header section (48).

15. A method according to claim 13, wherein said decompressing step (S16) comprises decompressing an address of a destination network node.

16. A method according to claim 13, wherein said decompressing step (S16) comprises decompressing a service classification code element.

17. A method according to anyone of claims 13 to 16, comprising, after said decompressing step (S16), a step (S24) of including at least a part of said decompressed header section (50) into said data packet (44).

18. A method according to claim 17, wherein said part of said decompressed header (50) is attached to said data packet (44) in front of said header section, such that said part of said decompressed header (50) can be forwarded before said header section (48).

19. A method according to claim 17 or 18, comprising, a step (S30) of removing at least a part of said decompressed header (50) from said data packet (44).

20. A method according to claim 19, wherein said removing step (S30) is performed after said routing step (S26).

21. A method according to any one of the claims 2 to 20, comprising a step (S28) of classifying said data packet according to a service class.

22. A method according to claim 21, wherein said classifying step (S28) is performed after said routing step (S26).

23. A method according to claim 21 or 22, wherein said classifying step (S28) comprises a step of reading a service classification code element from a header compression context table (20).

24. A method according to claim 22, wherein said classifying step (S28) is performed before said removing step (S30).

25. A method according to the claims 19, 22 and 23, wherein said removing step (S30) comprises removing said decompressed header data (50) except for said service classification code element.

26. A method according to any one of claims 21 to 25, wherein said forwarding step (S32) comprises a step of placing said data packet into one of a plurality of queues, the chosen queue corresponding to a value of said classification code point.

27. A method according to the claims 25 and 26, comprising a step of removing said service classification code element before said placing step.

28. A method according to any one of the preceding claims, wherein said forwarding step (S32) comprises radio or microwave transmission of said data packet.

29. A method for routing a data packet with a header section and a payload section from an originating router (A, 64) to a destination router (62, D) through at least one intermediate router (B, C), comprising the steps of
a) at said originating router (A, 64), routing (S26) said data packet to said intermediate router (B)
b) at said originating router (A, 64), compressing (S14) at least a part of

said header section containing routing information
c) forwarding (S32) said data packet from said originating router (A) to said intermediate router (B)
d) at said intermediate router (B, C), which is communicating with said originating router (A, 64) through said input interface (12), performing a routing method according to anyone of the claims 1 to 28, said output interface (32) communicating with a next intermediate router (C) or said destination router (62, D), respectively,
e) repeating step d) for any further intermediate router (C),
f) at said destination router (62, D), decompressing (S16) said compressed header section
g) at said destination router (62, D), removing (S20) said compressed header section.

30. A method according to claim 29, comprising a step of transmitting a header compression context from said originating router to said intermediate routers and to said destination router before performing the method steps of claim 29.

31. A method according to claim 30, comprising, at said originating router (A, 64), a step of assigning a header compression context identifier to said header compression context, and a step of including said header compression context identifier into said compressed header section.

32. A method according to claim 31, wherein said header compression context identifier contains a network address of said originating router (A, 64).

33. A decompressor device (10), comprising an input interface (12) adapted to receive at least one data packet containing compressed data (48), a decompressing means (14) communicating with said input interface (12) and adapted to decompress said compressed data (48) such that decompressed data (50) are created based on said compressed data, and an output interface (16, 16.1, 16.2) communicating with said decompressing means (14) and adapted to provide said decompressed data (50) of said data packet, wherein said decompressing means (14) is adapted to selectively decompress only compressed header data contained in a header section (48) of said data packet.

34. A decompressor device according to claim 33, wherein said decompressing means has access to a header compression context table (20) and is

adapted to decompress said compressed data using data contained in at least one predetermined section of said header compression context table, and/or using at least one predetermined mathematical decompression rule.

35. A decompressor device according to claim 33 or 34, wherein said decompressing means is adapted to decompress from said compressed header section (48) an identifier of an external network node (D) that is the destination of said data packet.

36. A decompressor device according to claim 35, wherein said decompressing means (14) is adapted to decompress only said identifier of said network node (D) that is the destination of said data packet.

37. A decompressor device according to claim 33, wherein said decompressing means is adapted to decompress said complete compressed header section (48) of said data packet.

38. A decompressor device according to any one of claims 33 to 37, wherein said decompressing means (14) is adapted to decompress a service classification code element from said compressed header section (48).

39. A router device, comprising at least one input port (24, 26) adapted to receive a data packet through at least one first communication link (52, 54, 56, 58), and a plurality of output ports (32, 34), wherein said input port (12) comprises a decompressor (10) according to any one of the claims 33 to 38.

40. A router device according to claim 39, wherein said input port (24) further comprises attaching means (36) communicating with said decompressor (10) and adapted to attaching to said data packet (44) data (50) received through said output (14.2) of said decompressor (10).

41. A router device according to claim 40, wherein said attaching means (36) is adapted to attaching said data to said data packet (44) in front of said header section (48), such that said decompressed header data (50) can be forwarded before said header (48).

42. A router device according to claim 39, 40, or 41, further comprising routing means (38, 40) communicating with said attaching means (36) and with said output ports (32, 34), and comprising lookup means (38) adapted to determine, based on routing information contained in said data packet (44)

and based on information contained in a routing table (40), at least one destination output port (32, 34), and forwarding (28, 30) means communicating with said routing means (38, 40) and adapted to forward said data packet to said determined output port (32, 40).

43. A router device according to claim 42, wherein said routing means (38) further comprises or communicates with removing means (42) communicating with said lookup means (38) and with said forwarding means (28), said removing means being adapted to remove from said data packet (44) said decompressed data (50) attached by said attaching means (36).

44. A router device for routing at least one data packet with a compressed header section, comprising at least one input port (124) adapted to receive said data packet through at least one first communication link (52, 54, 56, 58), and a plurality of output ports (32, 34), wherein said input port (124) comprises a reading unit (110) adapted to read a first header compression context identifier from said compressed header section, and a switching unit (114) adapted to replace said first header compression context identifier by a second header compression identifier.

45. A router device according to claim 44, wherein said switching unit (114) communicates with a switching table (116) assigning to said first header compression context identifier said second header compression context identifier and at least one output port identifier.

46. A router device according to claim 45, further comprising a control unit (112) communicating with said reading unit (110) and said switching table (116), and adapted to detect a new first header compression context identifier received at said reading unit (110), to assign a new second header compression context identifier and an output port identifier to said first header compression context identifier, and to create at least one entry in said switching table (116) for said identifiers, one entry for each assignment of an output port.

47. A router device according to claim 46, wherein said control unit (112) is additionally adapted to erase said entry in said switching table given a predetermined condition.

48. A communication network, comprising a plurality of network nodes (A, B, C, D) communicating with each other through a plurality communication links

(52, 54, 56, 58, 60), characterized in that said communication network comprises a network node (A, B, C, D) with a router device (22) according to any one of the claims 39 to 43 or any one of the claims 44 to 47.

49. A communication network according to claim 48, wherein at least a part of said communication links is a radio or microwave communication link (52, 54, 56, 58).

50. A communication network according to claims 48 or 49, wherein said network nodes (A, B, C, D) use an Internet Protocol as a network layer protocol.